LITERATURE CITED

HAUKE, R. L. 1960. The Smooth Scouring Rush and Its Complexities. Amer. Fern Journ. **50**: 185–193.

MANTON, I. 1950. Problems of Cytology and Evolution in the Pteridophyta. Cambridge University Press.

MILDE, J. 1867. Monographia Equisetorum. Nova Acta Acad. Leop.-Carol. **32**(2).

SCHAFFNER, J. H. 1931. Studies of Equiseta in European Herbaria. Amer. Fern Journ. **21**: 90–102.

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Shorter Notes

COLLECTING MARATTIA EXCAVATA IN COSTA RICA.—In 1958 I received a request from P. C. Hutchison and Myron Kimnach, who are busily engaged in building up the living collection of ferns at the University of California Botanical Garden in Berkeley, California, for a live specimen of *Marattia*. Having read in Standley's Flora of Costa Rica that one of the most primitive ferns, *Marattia*, had been found on the Cerro de la Carpintera, I had scaled the steep range on December 31, 1957, just a few days prior to the university request, and I had found the plants and taken one small live specimen, which, however, due to the confusion of caring for all kinds of plants unfortunately was neglected and died. I therefore prepared for another ascent of this treacherous mountain on January 10, 1958.

The cloud-forest on the Cerro de la Carpintera ranges down almost to the village of San Ramón de Tres Ríos at its base, at an altitude of 1390 meters. The crest, 1880 meters high, often remains hidden by black rain-clouds. The lower slopes are partly planted with coffee and partly serve as cattle pastures. The drier western slopes are covered with tall and thorny thickets, but the eastern slopes are wet, and the pasture consists of green, dripping wet mats of grass. Orchids, bromeliads,

and ferns thickly coat the few trees left on the lower slopes. Higher up in the forest, fogs, drizzle rains, and downpours regularly drench the eastern as well as the southern slopes day and night. There are only a very few really dry weeks during the course of a year. The climatic seasons are reversed in Central America from those of northern South America, and when the dry season begins there the rains begin in Central America. This is in April, when the rains from the Pacific sweep in from the west, and thereafter rains from both the Atlantic and Pacific Oceans alternate or frequently blend. This position of the Cerro de la Carpintera on the Continental Divide between two climatic zones gives rise to a vegetation unparalleled elsewhere.

In ascending the mountain one can observe perhaps five different vegetation zones, each influenced by its special factors of temperature, wind-drift, elevation, precipitation, and exposure. The plant species are a mixture of Atlantic coast and Pacific species, and include also many endemics. On the eastern summit occur many ferns—species of *Asplenium, Blechnum, Danaea, Nephrolepis, Lycopodium, Trichomanes, Hymenophyllum,* and many others. On the central ridge extending north is the cloud-forest, where the silence is broken only by the far shouts of a few howler monkeys. Here in the fog grows *Marattia.* It is a rare plant in this gloomy place, brightened only by a few pendent spikes of the heavy yellow flowers of the orchid *Acineta densa* and the red blossoms of a *Columnea.* About a half dozen specimens of *Marattia* were located. The heavy, globular trunk is almost entirely buried under the humus; the large fronds are not unlike those of a giant bracken, only fleshier. Excavating a trunk and getting down the mountain was a laborious task, successfully accomplished. The plants reached Berkeley in good condition and are now growing in the greenhouse of the Botanical Garden, possibly the only plants of *Marattia* in cultivation in the United States.—CLARENCE K. HORICH, *San José, Costa Rica.*